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ABSTRACT

The service receiving first priority in the new regional medical library (RML) program is that of document delivery. Since this is a federally sponsored program, monitoring devices must be established to determine if the program is accomplishing the aim of improving access to medical information. In this paper, two perspectives are used on which to base a design for measurement of document delivery services and on which to base performance standards: (1) the cost to the user of this service, and (2) the efficiency of the procedures. One overriding factor governs the design for measurement: a more precise definition of what variables are to be included with different measurements is necessary before any realistic performance standards can be established. Three sources of data are suggested: (1) the records generated in making requests, (2) the user time involved, and (3) the operational procedures in providing the service. Four priorities for analyzing this data are then suggested: (1) determining who uses the service, (2) analyzing reasons for unfilled requests, (3) collecting and analyzing data on request and loan processing time, and (4) establishing the actual user real time cost in using the service for different environments. (Author/JB)

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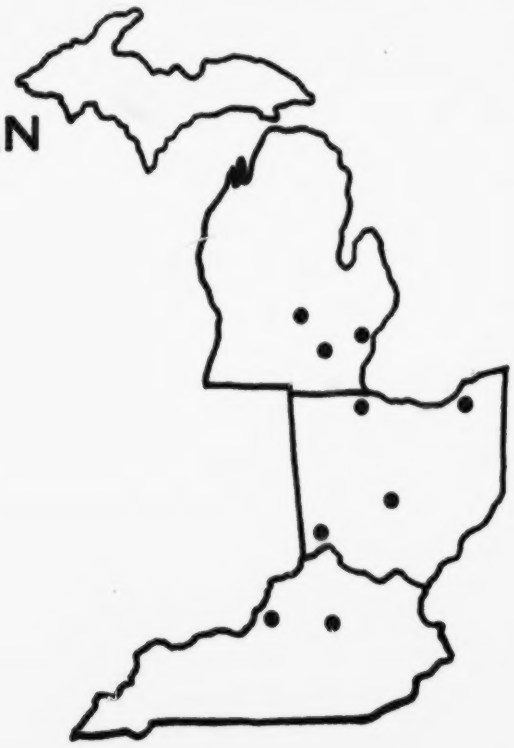

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PAPERS AND REPORTS, NO. 2

MONITORING AND MEASURING DOCUMENT DELIVERY SERVICE

by
Vern M. Pings

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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If no quantitative standard is defined against which to make comparisons, measurements must be stated in terms of social values; that is, an object or event is good or bad according to the taste or authority of the measurer. Social values are considered by many to be incommensurable.

> Theoretically this may be true; but in real life incommensurables <u>are</u> commensurable. Only a criterion of judgment and a system of weighting are needed. In nature the criterion is survival.... Natural selection commensurates the incommensurables. The compromise achieved depends on a natural weighting of values of the variables. (1)

Bureaucratic institutions are organized to carry out tasks for society which could not be accomplished by individual effort. (2) In Western society the survival of institutions, the criteria of judgment on the "value" of institutions, is dependent upon the market place and the ballot box. The analogy between nature and the market place has its limitations, as do all analogies. Bureaucratic organizations are corruptible and self-protective; the products and services of an institution supported by society are often judged in terms of the vested interest of the bureaucratic organization rather than its use to society.

The growing interdependence of our civilization requires an increasing institutionalization of social functions. The bureaucratic organizations to supply the needed products and services are generally created in one of two ways. The organization evolves through the rearranging and branching of an existing bureaucracy. The alternative method usually arises because of the recognition that existing organizations and agencies are inadequate and incapable of evolving to meet needs. An administrative or legislative action is taken to set up a "new" organization. Whether one or the other of the two general approaches is used, decisions as to priorities have to be established. Those given the responsibility to make such decisions have to place values on (i) the usefulness of the product and service, (ii) the resources available to produce the product or service, and (iii) the alternative methods of utilizing the available resources. The more precise the information available on (i) and (ii) to those who must make organizational decisions, the fewer are the alternatives in organizational procedures and methods.

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(1) Harlan, G. The Tragedy of the Commons. <u>Science</u> 162:1243-8, 13 December 1968.

(2) Blau, P.M. Bureaucracy in a Modern Society. New York, Handom House, 1956.

This paper is a discussion of some methods and approaches that can be used to acquire information on one service, document delivery, to be given through the creation of a new library organization, the regional medical library (RML). Specifically, it is an attempt to determine (i) what aspects of a RML document delivery service can be measured quantitatively, and (ii) what possible significance the measurements may have in evaluating the service.

CONDITIONS AND ASSUMPTIONS

Medical Library Assistance Act of 1965

The new institution, RML, was described by Congress only in the most general terms. Although it might be interesting to know what the intentions of Congress and the writers of the Act were, interpretations have to be made from the language of the Act itself.

1) Apparently, it was assumed that the existing health science library complex was not providing adequate service to research workers and professional people, hence the need for a new kind of institution.

2) That RML is a new kind of organization from a national viewpoint is clear in that one of the conditions for federal support is that libraries "modify and increase their library resources...to provide supportive services to other libraries as well as individual users of library service".

3) The program to create these new institutions is through a granting mechanism: this entails a procedure of review and evaluation that is quite different from the situation where Congress gives the authority to government agencies to issue contracts.

4) If no RML can be created for a geographic area through the granting mechanism, the National Library of Medicine is "authorized to establish, as a branch of the National Library of Medicine, a regional medical library to serve the needs of such an area".

5) Only <u>one</u> service is mentioned in the Act, that of document delivery; it is to be given without cost to the user, and facilities must be available to make facsimile copies.

The intention of the Act appears to be that a new kind of document delivery service be provided to libraries and individual users through the reorganization of existing libraries. Two things need to be measured: (i) the effectiveness of the institutional reorganization to accomplish the purpose of the Act, and (ii) the adequacy of the document delivery service to the user.

Document delivery service from the user viewpoint

A document delivery service is ultimately an individual service. Any measurement of the service must include its efficiency in terms of the user's time. Obviously, some kind of criteria must be established on users' qualifications and needs. Some criteria can be established a priori and others can only be determined after information is available to make judgments.

1) Who is a qualified user? Certainly the Medical Library Assistance Act has not socialized all medical libraries to make materials accessible without cost to all individuals who claim a need. Eventually, when the entire scholarly record is in machine readable form with terminals located in every office and every hospital ward, instant access may be possible. Until that time a priority method must be created.

2) Are there limitations on what may be supplied? A regional document delivery service should not replace local library service nor should a RML take over the function of a publisher's distribution system.

3) Should time priorities be established in supplying documents? Can users be grouped in some way according to their needs? Should all requests be answered within a set time limit, or should delivery be measured against a proportionate standard; i.e., a minimum percentage answered within one day, etc.

In summary, a document delivery service on a regional basis has to be judged in terms of user cost

> ...if delays in access increase user cost and the aim is to minimize this cost, then what must be minimized is the average access time to all publications and patron uses--those locally owned as well as those borrowed or photocopied. (3)

Conditions of measurement

Although the above questions can be asked, answers are not available. The determination of user cost in gaining access to documents has never been systematically studied. The sociological factors involved in this aspect of scholarly and educational communication are complex. The only effective measure so far devised to test user cost is through the administrative mechanism of settling upon a dependable service. If the demand for the service increases, then apparently the users find it a more suitable way to secure documents than alternative methods.

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(3) Williams, G. Library cost models: owning versus borrowing serial publications. Office of Science Information Service, November 1968.

If the market place is used as the measuring device for user cost or satisfaction then the deciding factor about the service is whether it "pays for itself". RMLs are not commercial organizations and hence a demonstration of monetary profit is unsuitable as a measure. Every publically supported library has constraints in establishing any service: (i) the available funds that can be diverted to support the service, (ii) the number and quality of staff, (iii) the extent of its resources, and (iv) the availability of space. Any service that is organized which ignores any one of the above constraints is likely to be undependable. The market place in this situation cannot be used as a reliable measure.

The measurement of RML document delivery service has to be viewed as a bureaucratic function. (i) Does it maximize efficiency of administration in terms of the external constraints? (ii) As a method of organizing social conduct for administrative efficiency, is it accomplishing its stated objective? To reiterate: A document delivery service must be designed to function efficiently within the constraints of the institution; and efficiency is measured in relation to the maximization of these constraints, and the effectiveness of the administrative efficiency is evaluated in terms of its increased use.

Assuming that a document delivery service is organized efficiently; that is, the facilities are fully exploited, an increased use places demands on the facilities which can produce three results, (i) reduce the amount of service by limiting the clientele qualified to receive the service, (ii) alter one or more of the constraints which in turn requires a revision in administrative organization, or (iii) reduce the efficiency and hence dependability which will in turn reduce the demand. On the other hand, once a document delivery service is established and operating with administrative efficiency, any attempt to expand it quantitatively, again, requires an alteration of one or all of the constraints of funds, staff, resources, and space. If the expansion of service is to be accomplished with administrative efficiency, then information on which (and how much) of the constraints to alter must be available to make rational plans.

Quality of measurements

A document delivery service is an ongoing operation and as such is a dynamic system. The act of studying should not alter the object of study. Further, the results of the study should allow for assessing changes in the system over a period of time, and above all, for a national service as set up by RMLs, a comparison among different environments is needed. Other requirements are needed in undertaking to measure and to evaluate an ongoing system where the objective is to improve and/or expand the system. (4)

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(4) For a fuller discussion on methodologic approaches, see Orr, R. H., and others. Development of Methodologic Tools for Planning and Managing Library Services. Bulletin of the Medical Library Association 56:235-240, 1968.

1) The data obtained by any method should be reliable, that is, reproducible if the data is to be used for planning and management decisions.

2) The methods of data collecting should have "face" validity to all those concerned with the service, including the user as well as the administrator.

3) The methods should be practical, in that

   a) the cost of collecting the data are reasonable,

   b) their execution should not interrupt a library's normal operation, and

   c) the user for whom the data is ultimately to be evaluated should not be burdened.

4) The measurements should be applicable to libraries, regardless of differences in size, location, environment, or details of internal operation.

5) The methods of data collecting at least should be suitable for application by a library's own staff, rather than being useful only in the hands of outside "experts".

WHAT IS MEASURABLE

A modern myth of science is that given enough funds and personnel, any problem can be solved. Society, in its congressional wisdom, has not always given scientists the wherewithal to solve all problems. Undoubtedly, a massive study in which subject interest profiles coupled with descriptions of all work activities of all health professions were related to the nation's health science library facilities and manipulated through some yet undeveloped technique of game theory or theory of groups could provide us with a temporary solution to the best way to deliver documents to all who need them. We live, however, in a statistical, irrational, institutional world. We must live within the conditions and requirements discussed above if any immediate gain is to be obtained. If the perspective developed so far is accepted, there are but two general ways to obtain meaningful data about document delivery services, (i) on its use and (ii) on the organizational efficiency in providing the information. A priority of the possible elements for study is discussed below.

Source of Data

Any document supplied through RML will produce records. The first step in any measurement or monitoring procedure of document delivery would be to determine if data generated through normal operations can be used. The A.L.A. Interlibrary Loan Request form contains the minimum information that must be available to fill a request efficiently whether the request is from an institution or an individual.

1) Source of request (if other than an individual)

2) Requesting individual

3) Status of individual

4) Specialty of administrative unit with which requester is associated.

5) Title of publication

6) Date of publication

7) Source of citation

8) Lending library, or in the case of referrals, libraries

9) Reason for non supply

Very little organizational data on the library procedures for the supply of documents can be secured from the request data. Such data will have to be secured through other methods.

Use of document delivery service

The total number of requests processed is obviously an important "statistic" in determining use. This number, other than showing an increase or decrease, has very little qualitative information which would provide a means for (i) assessing the relative importance in, say, improving health care, or (ii) evaluating for planning and management decisions. Other information needs to be added. Each of the kinds of information generated with a request is discussed for its particular relevance for measuring and monitoring the use of service.

1) Source of request. An obvious question in any marketable service is, who will buy it. If, for example, it is found that 50% of the requests are generated by industrial and commercial agencies, the document delivery service supported by federal funds is in effect a subsidy to industry; or, if it is found that 50% of the requests are generated by hospitals, but that the number of hospitals making such requests constitute only 2% of the nation's hospitals, a whole series of questions need to be asked, e.g., should some service be planned for the remaining 98%? This institutional information is probably now being tabulated in most libraries because of the need for billing. An analysis of this information should receive a high priority for the following reasons:

a) As a public supported program, a justification is needed for continued support; who uses the service (institutionally) is important to administrators and Congressmen;

b) As a relatively simple means to evaluate the impact of the document delivery program;

c) As a means to judge future directions for improvement; and

d) Is any individual institution or group of institutions taking advantage of a publicly supported service to the detriment of others. (5)

The actual analysis, once a consistent system is devised, is amenable to standard statistical procedures that are available from nearly all computing centers. Summaries can be prepared to include (i) types of institutions, (ii) number of requests by type, (iii) averages, ratios, and percentages of requests and institutions.

2) Requesting individual. Library service, in spite of what librarians may wish to achieve, is not used by everyone. Only a relatively small proportion of any group finds library service of use to them. A great deal of time could be spent in investigating why such a situation exists. Although the data is available from requests, the cost of tabulating and subsequently analyzing it on any routine basis would appear to go beyond the methodologic limitations discussed above.

3) Status and/or professional affiliation. Again, the tabulating of these data would appear to require an inordinate amount of time for the possible conclusions that could be reached. This might be done on a sampling basis; however, to place such data in a perspective it must be secured from many institutions. The information would be useful for essentially the same reasons outlined under 1) above. Since RMLs are now only beginning, it would appear that other data should receive priority for analysis.

4) Title and date of publication requested. Many studies have been undertaken to determine the most heavily requested biomedical titles. Each of these studies was a major undertaking and certainly such use information could not be tabulated as a routine operation. Perhaps some sampling technique could be devised or some machine readable record generated with each request. In both instances a careful design would have to be made to result in useful information which is different from that already available from other studies.

5) Source of citation. One of the most neglected aspects of completing an interlibrary loan request is verification. Although difficulties do not arise if (i) the citation is correct and (ii) the lending library owns the item, a great deal of librarians' time at lending libraries is spent dealing with incomplete citations for which there is no verification or source of reference. Because of the expense

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(5) For example, from two studies made in the last two years, it was suggested that any library that must borrow a title more than six times per year should consider the purchase of the title since the cost to borrow this many times equals the cost of owning the title, see Cziske, C. and Pings, V. A Study of Interlibrary Loans at Sinai Hospital of Detroit, July-December, 1965. Wayne State University Medical Library, Report No. 21. August 1966; see also Williams, op.cit.

involved in processing incomplete requests, some endeavor should be made to determine if any pattern can be found in (i) where requesters obtain information about the document they want and (ii) what bibliographic tools are used by different institutions in verifying requests. Perhaps if these two elements were correlated with types of institutions making requests and dates of publications wanted, some standard performance level could be established which could be applied in determining whether requests should be rejected or whether assistance should be given to those submitting requests. Further, criteria might be set for the quality and extent of reference collections that should be maintained in different sizes and types of health science libraries. Again, this kind of study would involve a great deal of tabulating and analysis which could not be done on a continuing basis in most RMLs.

6) Lending library. If unfilled requests are to be referred from one resource library to another and between RMLs some record of the number of such referrals must be created, if for no other reason than for accounting purposes. Certainly, referring requests from one library to another is less expensive to society than the return of a request which in turn has to be sent to another library. Although this makes "administrative sense", such a switching procedure has to be justified ecomonically.

7) Reasons for non-supply of requests. Interlibrary loan studies rarely analyze the reasons requests are not filled. Users may be impressed on occasion with the amount of material they can receive through a document delivery service, but only a few negative experiences are sufficient for them to seek an alternate source of information. As a means for measuring or monitoring a document delivery service the analysis of unfilled requests is far more sensitive than counting and tabulating filled requests. If a lending library is supplying at least at the 70% level, quantitatively the analysis of unfilled requests can reveal a great deal of management and performance information.

a) Volume or title not owned. If this reason should be proportionately high, this does not necessarily mean a library has an inadequate collection. Just by inspection, it can be easily learned if the reason for a high figure is that one or a small group of libraries are requesting items that are out-of-scope. Since the cost of processing an unfilled request is the same as filling one, such inappropriate requests should be stopped. If, on the other hand, the items requested are in scope, a simple listing of title and publication dates can be used to judge whether a major weakness exists in resource collections.

b) Items missing. Although no library administrator likes to admit that his housekeeping is poor, a simple count of the requests unfilled for this reason can reveal an unsuspected failure in any one of several routines that are necessary to keep a library operating efficiently; a lag in shelving, delays in binding procedures, etc.

c) Reference unidentifiable. As already pointed out, the processing of an unfilled request is as costly as a filled one. Inspection alone can identify if these requests are generated from a few libraries, and if so, steps can be taken to inform them that they should improve their procedures.

d) In circulation. If a proportion of requests are unfilled for this reason, it does not take either a great deal of analysis to determine (i) if the system of recall of materials is not operating adequately, or (ii) if the items are heavily used materials which ought to be duplicated.

e) Other reasons. The other common causes for non-supply of items are usually beyond the control of most administrative procedures, the items requested are in bindery, on reserve or reference, or not yet received. The bindery problem has been a knotty one since the advent of library binding. The only solution is one of staggering binding between library units. Such methods have been utilized by large public library systems but have rarely been tried, or if tried, maintained, by independent library units.

A careful tabulation of the non-supply of requests with even just a cursory analysis can produce information that is of administrative significance.

Optimum delivery service

Most library administrators operate with the assumption that if they receive no complaints, their library is working efficiently and satisfactorily. Non-complaint is probably the most dubious of measurements available to librarians. It is astonishing the adjustments users will make to an inefficiently operated library or to a library environment that appears to be beyond the ability of a librarian to maintain control because of external factors. If an RML network is established, users will have no alternate library resources. Obviously, each RML must operate optimumly. But what standard can be applied to determine what is optimum? If a "level of performance" is established, what can be done to improve performance? There are but three ways of monitoring a document delivery service that will meet the requirements for measurements discussed above: (i) the percent of filled requests of the requests processed, (ii) an analysis of unfilled requests, and (iii) measurement of timeliness of processing.

1. Ratio of filled requests to unfilled requests. Several individuals have traced the arbitrary standard of a "90% library" to a Public Health Service document. From any studies so far published no resource health science library has ever been able to attain this

standard. (6) The main reason this is an unrealistic standard is that it fails to take into consideration the requests received which are beyond the control of the resource library to fill. If a resource library has its housekeeping and routine procedures in order which can be monitored by analyzing unfilled requests discussed above, and the unfilled requests which could not be filled by any library were eliminated from the total count, the 90% performance level is probably already attained, if not surpassed, by most resource libraries. If the 90% level is not attainable because of lack of resources, a relatively modest one year's acquisitions program could probably bring up the level to 90% performance. A modest acquisitions program is one in which the budget would be increased the first year by an amount equivalent to the cost of a library's document delivery service and then maintained at one-fourth that level thereafter. (This latter statement is intuitively arrived at and hence, at this point in time, unchallengeable.) Whether the mystical 90% performance standard is an adequate one certainly can be easily determined by comparing performance among RMLs. However, it must be emphasized that such a standard can be realistic only if a more precise definition of what should be counted as a legitimate request is made.

2. Timeliness. Information, when it is recognized that it is needed, is almost always wanted by the user immediately. Instantaneous access to documents through any institutional means is impossible today and will remain so, except for specialized experimental situations, for many years. Obviously, library users have to make compromises which are related to the efficiency of libraries to deliver documents. Libraries, in turn, should attempt to organize their service to match the work patterns of users. Our civilization devises accouterments to deny man's diurnal biology, but individuals cannot ignore their biology. Document delivery services can be organized along compromised time sequences that relate to work patterns. (7)

a) Immediate delivery. By immediate is meant within a matter of minutes or at most several hours. Such a service can only be supplied if a user's library owns the needed document and has it on the shelf. There have been several attempts in the past few years to use telefacsimile equipment to transmit documents between libraries, but these have proven to be technically and economically unfeasible. (8) It cannot be considered a service goal of an RML system for some years.

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(6) For a review and analysis of these studies see, Wood, D.N. and Bower, C.A. Survey of Medical Literature Borrowed.... Bulletin of the Medical Library Association 57:47-63, Jan. 1969.

(7) For a fuller discussion of this concept see, Orr, R.H., and others. Measuring a Library's Capability for Providing Documents. Bulletin of the Medical Library Association 56:241267, July 1968; Pings, V. Library Service for Health Care. Journal of the Oklahoma State Medical Association 61:147-153, Apr. 1968.

(8) For a report on the latest attempt see, Josey, E.J. The College Library in New York 3R System. College and Research Libraries, 30:32-38, 1969.

b) Twenty-four hour delivery. If a user cannot get a document within a matter of two or three hours, he will say, "never mind", or "can you have it for me tomorrow at this time". A 24 hour document delivery service is possible in certain metropolitan areas if messenger service is available and with the use of TWX in some geographic areas. (9) The only alternative to messenger service and telefacsimile is the U.S. mail. The U.S. mail service has not been able to deliver mail even in metropolitan areas on an overnight basis dependably for many years, much less across state lines. Perhaps biomedical institutions can afford the cost of TWX, but is not yet a common device. Further, to obtain a 24 hour service in an RML system, this would mean all requests would have to be processed in a matter of hours.

c) Forty-eight hour service. Assuming an overnight mail delivery service, an interinstitutional document delivery service is possible if the lending library is able to process all requests the same day it receives them. Considering the quality of clerical help available to libraries in the past year, this ideal performance rate appears impractical. This may, however, be a temporary problem because the labor market may ease or the dispensers of money may recognize that higher salaries must be paid to secure adequate help. Nevertheless, no active library can process all requests the same day it receives them. There are too many unpredictable aspects in library operation--a wanted document is temporarily unavailable because it is undergoing some technical processing, is being used by someone in the library, is in the process of being reshelved, etc. Surely it is possible nevertheless to set some performance rate, say 70%, which should be completely processed the day received. Although such a standard could be arbitrarily set it would appear more practical to examine the performance rate of existing RMLs and from these rates establish a minimum level which could be raised as experience and knowledge of the factors involved in document delivery administration are codified and standardized.

d) Seventy-two hours or more. If a user is unable to secure a document in less than three days, would it serve his purposes just as well if he received it in several days? A great deal of effort may be expended to create an organization to provide a four day service when in fact, to the user, a seven day service would be just as satisfactory. A method to collect information which might arrive at least at a tentative answer to the question is discussed below.

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(9) The use of telephone to transmit requests is patently impractical. Close to 4200 biomedical interlibrary loan requests are generated each day.

3. Availability information. One of the intangible psychological factors of document delivery service is that the user wants to know what has happened to his request if he does not receive the document as he expects. Certainly a courtesy that should be extended to all requesters is a prompt report of what actions have been taken; it is just as important to report on an inability to supply a document as it is to supply it. Such a report will allow a requester to search for the information he wants from other sources, or from other documents. In measuring the timeliness of a document service, the time required in producing a negative response is also of value in measuring performance.

METHODS OF TIME MEASUREMENTS

Two general purposes underly this paper: (i) some measure of user cost or user satisfaction must be devised, and (ii) some measure of administrative and organizational efficiency must be developed other than the mere counting of work done.

Earlier it was suggested that monitoring of performance could be done by merely counting and abstracting information from the request documents generated. Some of the data has to be tabulated for the entire document delivery processes, other data may be acquired through sampling. The measurement of performance against time will require that staff be devoted to collecting data. Obviously, this can be done only on a sampling basis. To collect such information on a routine basis would not only be expensive, but the cost of tabulating and analyzing it would be beyond the practical constraints of an RML operation.

User cost and user satisfaction

The organizational efficiency of document delivery service has to be related to the user market. The user judges the service useful in terms of the time he makes his request to the time he actually receives it. He is unconcerned with the mechanisms needed to obtain a wanted document. The only elements within the control of RMLs are the processing procedures once the request is received. These procedures can be altered to improve delivery time if it is known that certain delays or difficulties exist. Further, as a public supported program, some means of monitoring the service from the user viewpoint should be developed so that it can be demonstrated that the source of delays can be identified. If the request is an interlibrary loan, delays may occur at the requesting library and not with the RML service. To measure the adequacy of a service, therefore, some communication link must be established with the user. If the following information were known, an evaluation of user satisfaction can be determined as well as provide information for administrative and management decisions.

1) Date request actually sent (from postmark)

2) Date and time request is received

3) Date and time request dispatched

4) Date and time request received at requesting library

5) Date and time requester actually received document or report

If time is considered to be a relevant aspect of a document delivery service, it is the user's time that is the important time. The above five dates and time can show where performance lags exist.

1) Interlibrary loan requests involve two institutions; complaints of slowness of receipt of a document by users are not always the fault of the resource library filling the request nor the U.S. post office.

   a) Because a requesting library prepares a request on a specific day does not always mean it is actually mailed that day; internal problems in mail pick-up and delivery within an institution can make the service appear inefficient at both the requesting and lending institution; efficient internal operation of a document delivery service may be negated by an inefficient mail pick-up service.

   b) Several alterations in organization can be effected if actual time relations are known for different environments, for example, (i) TWX can be used to send requests, (ii) additional mail deliveries to the post office can be arranged.

2) Depending upon sample size, information could be obtained not only of a RMLs performance, but that of other institutions as well.

Data collecting. A method that has been tested to collect data as suggested above is to generate an additional record as a request is processed. (10) To obtain information from the user, a pre-addressed stamped post card can be used which is attached to a sample of requests. Figure 1 is a suggested format. The resultant data is then easily manipulated by simple tab equipment, although if it is determined to be a good monitoring device, it would be more practical to make the data amenable for computer manipulation.

Processing time of interlibrary and other document requests. A document delivery service supported by a RML, as already discussed, is not all within its control. A RML, however, should have sufficient control over its internal operation to be able to demonstrate and to announce to its users (individual and institutional) that of the requests it receives, a certain percentage will be processed and sent within a given time. For example, knowing the usual transit time within a particular area, a RML should be able to tell its users that, say, 80% of the desired documents will be received within 48 hours after the request is received at the RML. To make such a statement the RML must have control of its processing procedures.

Data collecting and evaluation. A method has been developed to collect information on the processing of requests that has been tested in six resource libraries.(11) A form accompanies each request as it is processed (see Figure 2). The time of certain critical operations is entered on this

(10) Cruzat, G. Length of Time in Processing Interlibrary Loans. Wayne State University Medical Library, Report No. 8, April 1965.

(11) From unpublished reports prepared for USPHS Contract PH 43-66-540.

Figure 1

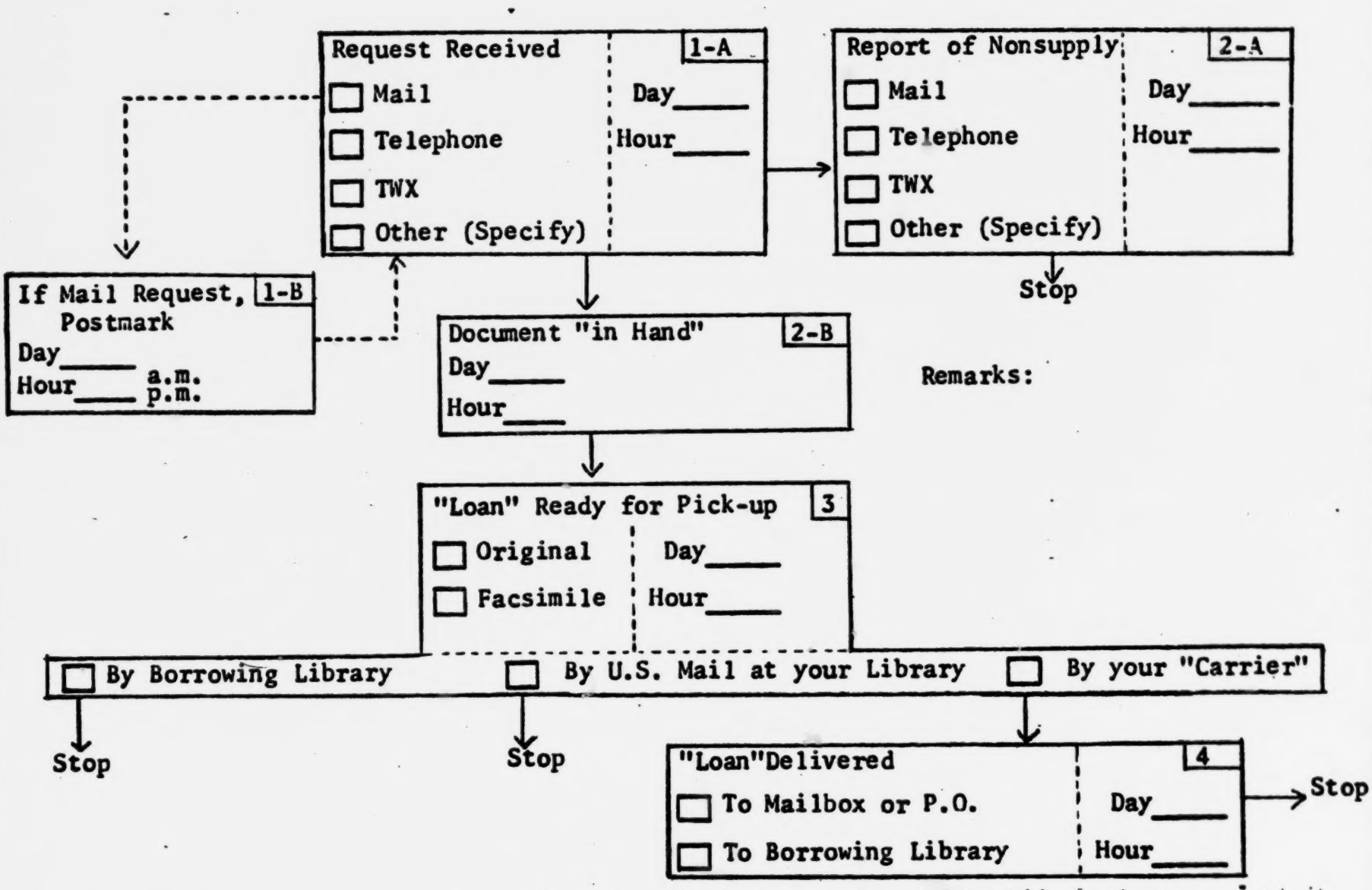
Original Request	Postmark Time_____	Rec'd Time_____	Dispatch Time _____
	Date _____	Date _____	Date_____
Referral	Time _____	Time _____	Time _____
	Date _____	Date _____	Date _____

Dear (name):

The Regional Medical Library is attempting to determine the adequacy of its organization in its document delivery program. Would you please indicate the day and the time you actually received the document you requested below and return this preaddressed stamped post card to us.

Date document received _____ Time (a.m. or p.m.)_____

Figure 2



form by the processors. After the data has been collected on a representative sample, a measure of the total processing time can be calculated. Although the median time--the time within which 50% of all completed requests are processed--can serve as a measure of "typical" processing time, the data can also be manipulated to show levels of performance, say, the time required to process 75% of the requests received. The data collected by this method allows one to assess request processing and loan processing time separately, and also to analyze how the former time intervals differ for requests received via different channels (e.g. mail, telephone, TWX) and how the latter intervals differ for loans furnished as originals and facsimiles. (12)

Recording processing time data for every request takes effort on the part of library staff. However, fairly precise estimates of processing time can be obtained routinely by recording data on only a sample. Nonstatistical considerations dictate a basic plan in which the sampling unit is a day's requests; and data recorded on all requests received on a random selection of days throughout the year. How many days' requests are required will depend on the precision desired, on how much the library's load varies, and on how many requests it processes.

Further considerations. The determination of processing time with the objective of establishing a performance standard must be arrived at through better definitions than what are now commonly accepted. This relates directly to what has been previously discussed in which it was pointed out that all requests involve two parties, the requester and the lender. If the requester submits an incomplete or incorrect request, how much responsibility should be taken by the lending library to make up for this deficiency? Should all of this work of verification be considered as part of the document delivery service or should the time be charged to another library service, for example, reference service? The amount of time involved can indeed alter considerably the performance levels. Say a RML, on the average, received 10 such requests per day each of which requires three hours of professional time to establish the validity of a citation. If the objective is a same day processing service for all requests, the resultant organization would require that 10 librarians be assigned to verification work each day since each request would have to go through a sequence of processing during the day before it is discovered that further work is to be done. There is no medical library in the nation that has a staff of librarians so large that such a service could be organized, consequently this work has to be spread over several days for it to be done at all.

Uncontrollable factors need also to be considered in establishing a performance standard. For example, most resource libraries find that about 10% of the unfilled requests are due to the fact that the item requested is being bound. What time interval should be allowed in setting up a policy with respect to the length of time a request should be held waiting for the item to be returned, and should this waiting time be included in its document delivery performance standard?

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(12) Data-recording forms are designed to facilitate keypunching and computer programs for analyzing the data have been written.

SUMMARY AND SUGGESTIONS

The RML programs are a new institutionalization of library service that is being created through the reorganization of existing medical resource libraries which in turn will require alterations in procedures in nearly all other medical libraries. The service receiving first priority is that of document delivery. Since this is a federally sponsored program, monitoring devices must be established to determine if the program is in fact accomplishing the aim of improving access to medical information, and if not, what constraints now operating in maintaining medical libraries can be altered to accomplish the aim.

Two general perspectives are used on which to base a design for measurement of document delivery services and on which to base performance standards, (i) what is the cost to the user in using this service, and (ii) how efficient are the procedures in providing the service. One overriding factor governs the design of measuring this RML service: a more precise definition of what variables are to be included with different measurements is necessary before any realistic performance standards can be established. A document delivery service involves two parties, the requester and the lender. Without distinguishing responsibilities between the two parties, discrepancies in measurements result. The data then become less useful for management and planning purposes. Further, any measurements devised must remain within practical limitations, and except for unusual studies, be established as a routine operation.

Three sources of data are suggested:

1) The records generated in making requests,

2) Two special means of data collecting requiring separate routines for collecting:

   a) The one determines the user time involved,

   b) The other monitors the operational procedures in providing the service.

All three sources can provide information on user cost and on administrative functions. Assuming a better definition of document delivery service than is now generally accepted is agreed upon the following priorities of analyzing data are suggested.

1) Determine who uses the service; this is needed for two reasons, (i) to justify the continuation of the service, and (ii) to determine relative emphasis of investment in providing supportive functions.

2) Analyze the reasons requests are not filled which can serve as (i) a monitoring device for service given and to establish better criteria for defining the service, and (ii) a means for determining the adequacy of resources and establishing performance standards.

3) Collect and analyze data on the request processing and loan processing time which can serve as a means of monitoring performance and to provide a basis for planning improvements through administrative and organizational means.

4) Establish the actual user real time cost in using the service for different environments.

Many other aspects of document delivery service can be studied and analyzed. Although they should not be considered as unimportant, these aspects can be studied more efficiently when the results are obtained from the four priority areas delineated.